

We claim:

1. A process for preparing a 2-hydroxy carboxylic acid using a reusable catalyst, said process comprises:

(a) carbonylating an enol ester with carbon monoxide and a hydroxyl compound in presence of a palladium catalyst and a solvent, at a temperature in the range between 50-250°C, at a pressure in the range of 50- 2000 psig, to obtain a carbonylated ester, wherein the palladium catalyst comprises one or more organic ligands that contain atom selected from the group consisting of oxygen, nitrogen, and phosphorus and

(b) hydrolyzing the carbonylated ester with an acid catalyst at a temperature of 10-125°C to obtain a 2-hydroxy carboxylic acid.

2. The process of claim 1, wherein the enol ester and the palladium catalyst are present in a molar concentration ratio in the range of 25:1 to 1,000:1.

3. The process of claim 1, wherein the hydroxyl compound and the enol ester are present in a molar concentration ratio not less than one.

4. The process of claim 1, wherein the carbonylation catalyst is recycled for the carbonylation step.

5. The process of claim 1, wherein the enol ester is an organic compound having formula  $R_1C=C(R_2)-O-Acyl$ , where  $R_1$  is H or an alkyl group containing 1-5 carbon atoms and  $R_2$  is H or an alkyl group containing 1-5 carbon atoms.

6. The process of claim 1, wherein the hydroxyl compound has a formula  $R-OH$ , wherein R is selected from the group consisting of H, a primary alkyl group containing 1-7 carbon atoms, a secondary alkyl group containing 1-7 carbon atoms, and a tertiary alkyl group containing 1-7 carbon atoms.

7. The process of claim 6, wherein the hydroxyl compound is selected from the group of consisting of water, methanol, ethanol, propanol, iso-propanol, butanol, iso-butanol, t-butanol and pentanol.

8. The process of claim 1, wherein the palladium catalyst is selected from palladium (II) having formula  $AB_xC_y$  or palladium (0) compound having formula  $AB_xC_y$ , wherein

A is palladium,

B is an organic ligand containing one or more coordinating nitrogen and/or oxygen and/or phosphorus atoms,

C is a halogen atom selected from the group consisting of F, Cl, Br and I,

$x+y$  is an integer ranging from 1 to 4, and

$x$  and  $y$  can vary independently in the range of 0 to 4.

9. The process of claim 1, wherein the palladium catalyst is selected from the group consisting of palladium chloride, palladium bromide, palladium iodide, palladium acetate, and metal complex of palladium.

10. The process of claim 9, wherein the metal complex of palladium is selected from the group consisting of bis(acetylacetonato)palladium(II), bis(triphenylphosphine)dichloropalladium(II), bis(triphenylphosphine)dibromopalladium (II), bis(triphenylphosphine)diiodopalladium (II), bis(pyridine)dichloropalladium(II), bis(pyridine)dibromopalladium(II), bis(pyridine)diiodopalladium(II), bis(acetonitrile)dichloropalladium(II), bis(benzonitrile)dichloropalladium(II), and tetrakis(triphenylphosphine)palladium(0).

11. The process of claim 1, wherein the organic ligand is a compound containing one or more coordinating O atoms selected from the group consisting of acetyl acetate, salicylaldehyde, and *p*-toluenesulphonic acid.

12. The process of claim 1, wherein the organic ligand is a compound containing one or more coordinating N atoms selected from the group consisting of pyridine, pipyridine, triethyl amine, tributyl amine, quinoline, isoquinoline, o-phenylenediamine, and p-phenylenediamine, ethylenediamine.
13. The process of claim 1, wherein the organic ligand is a compound containing one or more coordinating N and O atoms selected from the group consisting of 8-hydroxy quinoline, bis(saliylidene)ethylenediamine, salicylaldoxime, picolinic acid, nicotinic acid, and anthranilic acid.
14. The process of claim 1, wherein the organic ligand is a compound containing one or more P atoms selected from the group consisting of trimethyl phosphine, triethyl phosphine, tri-n-butyl phosphine, phosphine, triphenyl phosphine, bis(dicyclohexylphosphinobutane), bis(diphenylphosphinopropane), and bis(diphenylphosphinohexane).
15. The process of claim 1, wherein the solvent is an organic solvent selected from the group consisting of toluene, benzene, chloroform, dichloromethane, dichloroethane, chlorobenzene, o-dichlorobenzene, p-dichlorobenzene, ketone, cyclic ether, and nitrile.
16. The process of claim 15, wherein the ketone is selected from the group consisting of acetone, ethyl methyl ketone, diethyl ketone, and acetophenone.
17. The process of claim 15, wherein the cyclic ether is selected from the group consisting of tetrahydrofuran and dioxan.
18. The process of claim 15, wherein the nitrile is selected from the group consisting of acetonitrile and benzonitrile.
19. The process of claim 1, further comprising separating by vacuum distillation or solvent extraction the palladium catalyst.

20. The process of claim 1, wherein the acid catalyst is selected from the group consisting of p-toluene sulphonic acid, aqueous hydrochloric acid, and a resin.
21. The process of claim 1, wherein the hydrolysis catalyst is recycled for the hydrolysis step.
22. The process of claim 1, further comprising separating by vacuum distillation or solvent extraction the acid catalyst.
22. The process of claim 1, wherein the 2-hydroxy carboxylic acid is lactic acid.